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ROCKS and MINERALS PEEKSKILL, N. Y., U. S. A.

The official Journal of the Rocks and Minerals Association

Chips from the Quarry

STARTING ON THE PROPER ROAD

It is most gratifying to note the keen interest in the welfare of ROCKS AND MINERALS as manifested by so many of our subscribers. From time to time some of these subscribers send in good ideas for improving the magazine or for increasing its subscription list. Wm. C. Chandler, of San Jose, Calif., is one of these enthusiastic subscribers. And he has a good suggestion to offer us. Writes he:

"I wish to revive the idea represented on the inside front cover of the October, 1935, issue of ROCKS AND MINERALS by enclosing a one year subscription for a lady I recently met who is deeply interested in our hobby.

"If those of us regular subscribers who know the value of ROCKS AND MINERALS were to keep our eyes and ears open to opportunities, we can build up the value of our magazine by following the idea mentioned. It means so little to do this, so far as the cost is concerned, but the benefit is obvious—we do another a good turn in getting him acquainted with ROCKS AND MINERALS. Subscribers should give this idea some serious thought. When we make such a present to a new 'Rock Hound', it is not something that will die upon first receipt. Remember we are making twelve presents in that year's subscription which means a constant reminder of what we think of our magazine.

"When I am thanked for my gift I believe that here is the opportunity and the proper time to set this 'Pebble Pup' (I like that name, huh!) on the right path that will lead him to a position where he may justly be classified as a 'Rock Hound'. I will call his attention to the Classified Ads and recommend that he secure a copy of *Handbook for the Amateur Lapidary*, by J. H. Howard (this book has been of wonderful help to me). Also *How to collect minerals*, by Peter Zodac (I consider this a 'must have' for the beginner). The display ads would also be brought to his attention and he would be advised which dealers can furnish good specimens for polishing—typical common minerals for beginners—and nice crystals, crystallized specimens, or even cut stones.

"I will suggest to the new subscriber that when he corresponds with a dealer for the purchase of minerals or other items that he mention my name and address—said dealer could mail me a coupon or send me a nice 'hunk O' rock'. The 'Pebble Pup' would be pleased to be given suggestions. The dealers should

Peter Zodac

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Whole No. 143

STRATEGIC MANGANESE*

By M. L. SEGELER

"Strategic Minerals" is a much hackneyed expression these days. No one really agrees on exactly how many strategic minerals there are, although the term originated as far back as the last war. It was then, we discovered that when a country waged war, production suddenly assumed unheard-of proportions. Many materials which were sufficient for normal needs became scarce and, for one reason or another, unobtainable. This was particularly true of certain mineral resources which we had found necessary to supplement with foreign purchases. Manganese is an example.

In normal times the United States produced only 1/10 of its manganese requirements. The other 9/10 had to be purchased from foreign lands. Russia, British Possessions, Brazil and Cuba were the principal sources.

Manganese is most important in the making of steel. In fact its importance is so great that without it good steel would be a rarity, for into every ton of steel must go at least 12½ lbs. of metallic manganese. Strange to say, manganese, though brittle itself when pure, prevents brittleness in steel. Manganese is the best scavenger for removing oxygen, which if left in steel would weaken it. It also combines with the harmful sulfur by forming manganese sulfide which slags off. In this manner good steel is made. In addition to its use as a scavenger manganese forms a series of hard steel alloys. The more you hammer, roll and mistreat such steels the tougher they get. It takes little imagination to realize what this means to American tank and battleship armor plate in time of war.

In the peaceful decade now over, we used from 700,000 to a million tons of high-grade manganese ore per year, while the entire world scarcely used double this quantity. Our dependence on foreign supply will be realized from the following figures—figures are for 1937: We imported from Soviet Russia 46 per cent; from the British Possessions 36 per cent; from Cuba 13 per cent and from Brazil 8 per cent of our needs.

Pres. Roosevelt has ordered an enormous expansion of our armor plate program on top of greatly increased steel requirements for other war purposes. What this will mean to our manganese consumption staggers the imagination. We can no longer count on foreign supplies because of the transportation problem although we will probably get some shipments through. Our enemies are well aware of this condition and will do all they can to prevent the ores from reaching us. Fortunately the Reconstruction Finance Corporation foresaw the danger and wisely purchased a big stock-pile.

So much for the imports. What is the story of manganese in the United States? Why, if we knew manganese was so important to our greatest industry did we not exploit our own deposits? The Government was accutely conscious of these needs since the first World War and has made every effort to make us minerally independent. A great many surveys were

* Reprinted by permission from the February, 1943, issue of *Industrial Gas*.

made in all fields, the manganese deposits receiving particular attention. It was found that there are 1,850 manganese deposits scattered through 32 states but the majority of them are of little value. They are either too small or else the ore is too low grade. The big mining companies could not produce manganese from these low-grade ores cheap enough to compete with foreign sources. No company was willing to experiment and spend money on new developments while the ore could be imported so cheaply from abroad.

Now that war has forced us against the wall, we must make use of every scrap of material we can find. But, there is more to the story than just trying to gather in all the manganese we can find on our lands. The difficulty which has always confronted the industry is simply this. Manganese ores to be of use in the making of steel must contain 35 per cent manganese or better. These are called high-grade ores, but the steel industry demands even better ones. They classify as high grades, ores containing 46 per cent or more of Mn. The various ores of manganese can be graded according to the percentage of Mn which they contain as shown in Table 1.

The four high-grade ores unfortunately occur, insofar as deposits of economic importance are concerned, only in distant countries. Nevertheless the low-grade ores are becoming increasingly important in our present national emergency. The U. S. has a large supply of low-grade ores which until recently were put on the dump pile in many mining localities. Although the low-grade minerals apparently have a high percentage of manganese they always occur with so much silica and other gangue materials that the actual percentage of manganese is quite low.

American low-grade ores have been and are used in the manufacture of the metallurgical alloy, spiegeleisen which is used in the Bessemer process to make a high carbon steel. The high-grade ores are required to make ferromanganese which is an alloy containing 80 per cent Mn and 20 per cent Fe. This is the product which is needed so badly for steel making and especially for tough armor plate. It may be questioned as to why we cannot use a larger amount of spiegeleisen in place of ferromanganese. Theoretically, spiegeleisen, with 80 per cent Fe and 20 per cent Mn should work, but due to impurities such as phosphorus and silica it is useless for good steel. As the quantity added increases so do the impurities. Table 2 showing the composition of ferromanganese and spiegeleisen illustrates this point.

Table 1—Classification of Mn Ores

Name	Formula	Per cent Mn
High-grade Ores		
Pyrolusite	MnO_2	63 approx.
Manganite	$Mn_2O_3.H_2O$	62.4
Hausmanite	Mn_3O_4	72.5
Braunite	$Mn_2O_3.MnSiO_3$	69
Low-grade Ores		
Rhodochrosite	$MnCO_3$	47.6
Rhodonite	$MnSiO_3$	41.9
Franklinite	$(Fe, Zn, Mn)O.(FeMn)_2O_3$	varies

Table 2—Impurities in Mn Alloys

Ferromanganese Per Cent			Spiegeleisen Per Cent
Mn	80	Approx. type Composition	20
Fe	20		80
Si	.5		1.0
C	6.0		6.0
P	.1		.15
S	.03		.05

The problem then is to find or make the high-grade ores. We have plenty of low-grade ore. Our problem would be solved if we could find a way to raise the manganese concentration in low-grade ore. That problem has been solved today. Only recently, after years of work and experimenting, a new process of beneficiation has been put into commercial production. Beneficiation means the reconcentration of low-grade ores into high-grade ore. It sounds simpler than it is.

For many years the Government and various mining companies toyed with this idea. Up in Butte, Mont., which is perhaps the most famous mining area in the world, there are, among other things, a lot of manganese ores. In general the ores are of two main types; the black oxidized ores near the surface, and the pink carbonates and silicates which occur beneath. The oxidation zone extends only for 20 to 200 ft. beneath the surface. Originally much fairly high-grade ore was found in the outcrops but that has long been exhausted. We used up most of the high-grade ore at the time of the first World War when Montana had a brief flurry of manganese mining.

Below the oxidized zone the manganese ore occurs largely as the carbonate, known as rhodochrosite. Most of it is fairly pure, averaging 35 per cent Mn.

The Emma mine at Butte has been in the limelight recently. Here the finest quality of rhodochrosite occurs so that it has been profitable to mine it for at least 25 years. The tonnages have never been large and even in the peak year of 1940 only 20,000 tons were shipped. In addition to this ore, the lodes contain an almost unlimited quantity of low-grade material consisting of the carbonate and silicate of manganese together with quartz mixed in varying proportions.

On account of this large amount of low-grade ores, much attention was devoted in recent new studies at Butte. Experiments were first made with the silicate ores. These were soon abandoned because the association between the Mn and the quartz was such as to make it extremely difficult, if not impossible, to produce low silica concentrates by any of the various ore-dressing methods.

The carbonate ores were next experimented with. A typical sample of concentrate was about half quartz, with lead, zinc and iron sulfides also present. The rhodochrosite amounted to about 40 per cent so that probably the actual manganese content was only about 20 per cent or less.

Several methods of separation were tried. The gravity method was only partly successful. This method is based on crushing the ore and putting it through a mesh in the hopes that the relative density of the minerals present would cause separation. The trouble was that much of the quartz was finely disseminated in the rhodochrosite and the sulfides were interlocked with the quartz. This would mean that some composite grains would have the same density as rhodochrosite. It was decided that although the method was not very effective it might be of some use if it were applied to remove relatively pure chunks of quartz and thus eliminate grinding all this later.

Magnetic concentration was next tried. With the aid of a high intensity magnet it was found that separation was quite possible on finely crushed ore. However, several difficulties arose. Most ores of this type contain rhodonite, which would become separated out with the rhodochrosite. As rhodonite makes a siliceous product which is very refractory, this method proved unsatisfactory. Even if the rhodonite were absent, the ore must be dried and sized before passing through the separator. This added greatly to the cost and slowed up the time.

Finally flotation methods were tried with considerable success. This method is now used commercially at all the more important mines. Excellent separation of the ores may be obtained. First, the sulfides are removed by the use of pine oil, copper sulfate and other chemicals. Then the rhodochrosite is floated off by the addition of sodium oleate or oleic acid and pine oil. The quartz and the

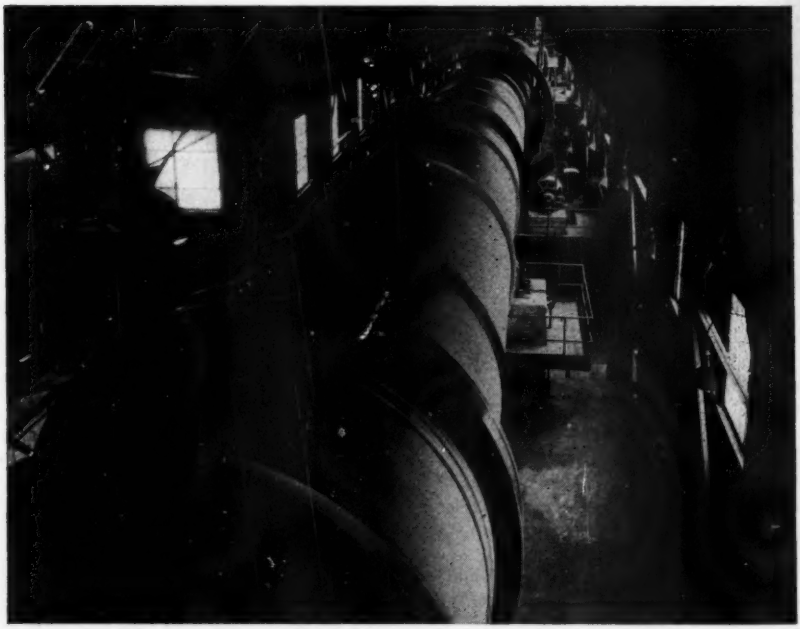
rhodonite simply pass into the tailings.

The ore is now in the form of a concentrate but it is still low-grade ore. Now comes the real problem. How can this low-grade ore be concentrated so as to produce an ore rich enough to be used in the manufacture of fine steel? The theory worked on was roughly this: If the manganese carbonate could be treated to drive off CO_2, MnO, a high-grade manganese product, should result.

A giant rotary kiln was built. The $MnCO_3$ concentrate was fed in. Powdered coal flames were tried, producing long flames with radiant heat. The CO_2 was driven off but another difficulty arose. Considerable heat was required to drive off the CO_2. The use of powdered coal flames for this purpose kept temperatures high far into the kiln. As MnO has a lower melting point than the carbonate, the MnO fused; frequently forming a solid ring which froze on the sides of the kiln. This stopped operations because it was necessary to dig and blast the MnO from the kiln.

Various fuel experts were consulted. A new kiln was built at Butte fired by natural gas. The natural gas flames are short and sharp with little radiant heat, and the burners can be concentrated and controlled. Intense local heat drives off the CO_2 in the first 25 ft. of the kiln. Then the temperature drops sharply and the rotation of the kiln simply nodulizes the MnO without any of it sticking to the walls of the kiln. The final product is this nodulized MnO which averages 60 per cent Mn. The beneficiation is complete and the new ore is sufficiently high-grade to be used for steel making.

This is the story of how the manganese problem has been solved in only one locality. The War Production Board and the Bureau of Mines have plans for



An oven 270 feet long is cooking up trouble for the Axis at Anaconda. Into one end of this huge rotary kiln goes finely ground manganese carbonate. It is roasted in the rotary kiln and comes out at the far end in the form of nodules of manganese oxide ready for use in the production of open hearth steel.

Courtesy *Industrial Gas*

Red hot nodules of manganese oxide drop from the rotary kiln onto an endless steel conveyor belt which puts them through a cooling process and carries them to the stock-pile where they await orders from Washington for shipment.

Courtesy *Industrial Gas*

other methods of beneficiation for other localities. Each different ore will present a different problem. The story of the Emma mine is not the story of a laboratory process still being developed. It is exciting and important news of real production in our manganese industry . . . from 20,000 tons in 1940 to more than 100,000 in 1942.

Editor's Note: We do not as a rule reprint articles from other publications but this is such an interesting one that we feel it should appear in ROCKS AND MINERALS. Incidently the author is the wife of Curt Segeler, the President of the Queens Mineral Society.

KILLINGER ON BUSINESS TRIP TO MEXICO

Paul E. Killinger, of Buffalo, N. Y., whose very interesting article, "The Pekin Quarry at Lockport, N. Y." appeared in last month's issue of ROCKS AND MINERALS, is on a business trip to Mexico City, Mexico. We hope he may have an article for us covering his trip as he has visited a number of interesting localities while there. He is due to reach home shortly.

MORE ABOUT TILLY FOSTER

By JOHN N. TRAINER

Last winter I made unexpected progress with my collection of Tilly Foster minerals. After visiting the collections at Yale and in the New York State Museum and after further reading, especially of Dana on the pseudomorphs of Tilly Foster in the *American Journal of Science for 1874,* I re-examined every specimen and made some interesting and disconcerting discoveries.

ENSTATITE in gray fibrous form had been previously identified as diopside. I had looked for it in this form for years; here it was right under my nose. I have never found enstatite in prisms but have, of course, found the variety bronzite.

HYDROTALCITE was already in the collection as soft white fibrous crusts covering chondrodite on massive magnetite. The material I had previously reported as hydrotalcite was nothing but plain talc which effervesced in hydrochloric acid because of the calcite between the talc plates which was a mean trick for Nature to play on me.

LIMONITE AFTER BIOTITE was found by me in 1938 on a two by three inch piece of dolomite as an aggregation of plates a quarter of an inch in thickness, showing the curves which are characteristic of the Tilly Foster biotite. The color is bronze—a little brighter than bronzite. It took four years to identify this pseudomorph! It has not previously been reported.

MAGNETITE in octahedrons modified by the cube, a rare form, was found on the dumps at one of the few times I was there last summer. The crystals are isolated and small and are in the gneiss which surrounded the ore body.

MAGNETITE AFTER CHONDRODITE, two specimens, were already in the collection, labeled as brown chondrodite. The brown is only a thin coating easily removed under which are the magnetite crystals in chondrodite form. The test for magnetism originally made was deceptive because the matrix of the specimen is massive magnetite.

MAGNETITE AFTER DOLOMITE was discovered on a very nice specimen of serpentine after actinolite which has been in my collection since 1938. It is a small rhombic cleavage. Striations indicate that the original dolomite was polysynthetically twinned.

PROCHLORITE as vermiculite crystals and serpentine after it were both on other specimens in the collection. I already had the former in massed flakes. The pseudomorph has not previously been reported.

PYROXENE VARIETY AUGITE is another case of mistaken identity. My specimen when purchased was labeled diopside. The fact that I did not have augite which was reported long ago from Tilly Foster prompted me to go over my pyroxenes again with good results.

SERPENTINE AFTER CALCITE—I have put side by side three slickinsided specimens already in my collection, alike in form, which show straight calcite in one, calcite partly altered to serpentine in the second, and calcite fully altered to serpentine in the third. The last one —the pseudomorph—was in a pile of spare serpentine.

SERPENTINE AFTER CLINOCHLORE was in a tray of clinochlore crystals collected over the years and is in the form of lath-like rectangular plates on pyroxene. These plates were formed by parting of the chlorite under pressure. Serpentine after hexagonal crystals was already in the collection.

SERPENTINE AFTER ENSTATITE VARIETY BRONZITE was found by the writer last summer as a ten pound mass. It was soft indicating decomposition. The color on fresh surfaces is a dull brownish green and on exposed surfaces it is bronze like the original mineral but darker. Serpentine after enstatite prisms is an old Tilly Foster mineral but this one is new.

SERPENTINE VARIETY MARMOLITE is, in my opinion, the same as serpentine after talc found in 1937; it

resembles the material from Hoboken and answers to Dana's description but does not resemble at all the specimens labeled marmolite which I have seen in certain museums and private collections!

SERPENTINE VARIETY RADIOTINE was one of the season's interesting finds—very pretty spherical greenish white aggregates of radiating fibers. I have now found at Tilly Foster all the varieties of serpentine described in Dana's text book or think I have; there are so many differences of opinion about them that one cannot be dogmatic.

The collection was enlarged not only by the above but by gifts of orange colored fluorite, serpentine after pyroxene, and a piece of zoned dolomite: by purchase of a fine chondrodite and by the following brought home from the dumps: prehnite, stilbite, actinolite, picrolite, and argentine calcite and for the first time specimens of precious serpentine and black dolomite.

Editor's Note: The locality is the famous iron mine (now abandoned) at Tilly Foster, N. Y.

SOME PETRIFIED WOOD OCCURRENCES IN CALIFORNIA

By WILLIAM C. CHANDLER

San Jose, Calif.

Several years ago I started to save concentrates from streams in which I was prospecting for gold-bearing gravels in various parts of California. On one of my latest trips I was on the lookout for cutting material and as petrified wood is my weakness this mineral received special attention. The following items are from my notebook where some good specimens have been found.

Willard Creek, 2 miles west of S. P. R. R. bridge, below highway 36, between Susanville and Westwood, Lassen County, Calif.

Above highway at this point several different varieties of petrified wood were found in gravel bank. Also many varieties of breccia jasper which were exceptionally beautiful. One piece of solid, milky bluish agate also found.

On hilltop, 8.3 miles north of the Feather River bridge, at Oroville, Butte County, Calif. West of Highway 39, between Oroville and Chico, about half-mile from pavement. Some different specimens of petrified wood. Two different pieces of agate. These specimens are to be found in little patches of gravel here and there over the hilltop where they rest on hard pan and have a rusty, fused-looking surface.

Bear River, near Colfax, on highway 49, Nevada County, Calif. One piece of petrified wood was all that was found here but I only stopped for a few minutes. Have learned since that many varieties of petrified wood have been found there and hope to again visit the place.

A dry creek about 7½ miles west of San Andreas, Calaveras Co., Calif., on Highway 12. Three different specimens of petrified wood found here.

A dry creek 6 miles west of Valley Springs, Calaveras Co., Calif., on Highway 8. Three varieties of petrified wood found here and one of them was the most perfect specimen of "Egyptian Jasper" that I ever saw. Absolutely solid. Has streaks of orange and yellow running through a beautiful chestnut-brown. Though I spent a day in that locality I found no more like it but found other brown jasperized wood. The gravel along the highway between Valley Springs and the last mentioned place seems to be all from an ancient river bed from around that neck of the hills. The gravel along highway between Valley Springs and San Andreas seems to be very much the same.

A friend of mine gave me a nice piece of petrified wood that he had found in San Pablo Creek, east of Oakland, Calif. Though I have not been there myself, I am quite sure he is reliable and so quote that place as a source for the mineral.

ON THE SIZE OF SPECIMENS

HARRY Y. DRAKE

East Orange, N. J.

I am still not quite sure whether my first great inspiration to collecting minerals was fortunate or otherwise. It came about this way. Perhaps thirty years ago, while I was still in school and money was rather scarce in our home and we had no automobile, my father, mother and I used to spend Saturday afternoons in Newark, N. J. partly shopping but mostly looking for something interesting. At that time Newark had no regular museum, but on the top floor of the Free Public Library was a room known as the Science Museum, which contained the collections of the late Dr. William S. Disbrow. This exhibit was largely one of minerals and rocks, the balance being composed of seeds, woods, and various other natural history items, and as one would expect of a doctor, an articulated human skeleton.

My father and I had collected minerals for several years in no very serious or systematic manner, but a few visits to the museum were all we needed to transform our interest to real enthusiasm and start us on a hobby that has been our passion ever since. The Doctor's minerals were displayed in well-lighted table cases and many specimens are still clear in memory: the uraninite and the shadow of a key it had impressed on a photographic plate, the golden calcite from Joplin, the bubbly-looking kidney ore, and most vivid of all a ball of red stilbite about the color and size of a large strawberry perfectly formed in a cavity in a basalt block, the specimen being labeled "Upper Montclair, N. J." Specimens from Paterson, Great Notch and Upper Montclair were so numerous that our curiosity was aroused and we wondered just how this beautiful material was found, less than ten miles from our own home.

One Saturday we met the owner-curator in person and found Dr. Disbrow to be a very gracious and helpful person. He assured us there was nothing to it. Just locate the quarries and it was practically certain we could find more specimens than we could carry. The next week we set out for Great Notch. It was a fine summer day and as we hurried north from the Montclair Teachers College we heard the sound of blasting somewhere ahead. When we entered the quarry we saw that the blast had been in the southwest corner near the spring which all who collected there will remember. The quarry face was dotted with exposed pockets lined with quartz, calcite, prehnite and zeolites. The same minerals were mixed through the masses of rock which lay on the floor of the working. Right here the museum influence asserted itself. We had hitched our collecting wagon to a star, or less figuratively set our scale of ideals in a museum. Father had been greatly impressed by the large specimens, 6″x6″ and larger and he soon picked up more heavy masses of this type than he could hope to carry. I on the other hand had developed a kind of "perfectionist complex", for I was not satisfied with anything short of a specimen equal in quality to those in the Disbrow collection and also favored cabinet or hand size specimens—the 2″x3″ and 3″x4″, nothing smaller. However, we managed to fill our bag to capacity and hiked back to the trolley line, excited and overburdened, and exceedingly overheated.

Those attitudes towards specimens clung to us. As time went on father brought home many large masses, among them a pectolite about six by eight inches and an equally large apophyllite which we were proud to have Dr. Disbrow accept for his museum. He returned the compliment by giving us two fine tourmalines, a pyromorphite from Phoenixville, Pa. and some Franklin material. I went on seeking perfection and I am afraid this habit led me to overlook much that was rare and worthwhile because it was not up to my stan-

dard of size or condition. On the other hand, it restrained me from cluttering my collection with inferior material just because it represented a specie or was easy to obtain. Still neither father nor I paid much attention to *small* specimens which I have come to consider all 1″x1″ and smaller.

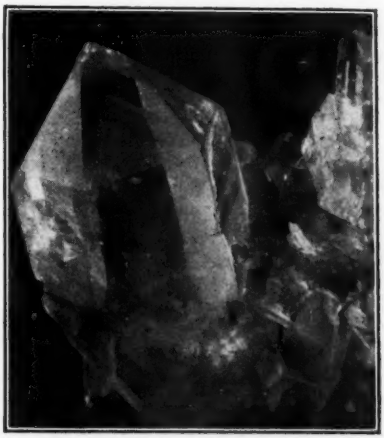
One day we noticed a collector at Great Notch picking up tiny loose crystals and fragments of minerals and putting them in a cigar box. In conversation he explained that he used them to decorate picture frames. It seemed he cut a groove in the frame and fastened the minerals in it with glue or cement. The idea caught my father's fancy and he collected a quantity of such small pieces, but he never got around to making a picture frame. I still had little heart for collecting miniature specimens. After Great Notch and Upper Montclair quarries closed we had more time to study and appraise our specimens, and were surprised to find how many perfect and beautiful little groups were among these minutae.

Almost without our noticing it other small groups of crystals or single crystals in matrix worked their way into our collection, some because the price of specimens larger than 1x1 was beyond us as with my azurite from Tsumeb, or because of their beauty and perfection which is illustrated by a specimen from Haddam, Conn.—a ⅜″ clear green tourmaline stuck in a ½″ square mass of albite crystals. As we began to see other museums we learned that no specimen is too small to exhibit provided it is beautiful or perfect or unusual.

A short time ago a friend of mine, who is an excellent photographer, built a microcamera which enabled him to take pictures of small objects showing them enlarged up to 12 times. Casting around for subjects he suggested I let him work with some of my minerals preferably not more than one square inch in area. He made a very interesting series of pictures for me, the most striking of which shows a group of quartz crystals from Ellenville, N. Y., enlarged 4.8x in which a phantom appears in the largest crystal. A ⅛″ crystal of pyrite in limestone from Franklin enlarged 10.5 times show the combination of cube and octahedron with startling clearness.

Now these miniature specimens have become a special source of pleasure to me, and when we are collecting I have my eyes open for them while my father has never lost his passion for the larger things. Wherever he goes he tries to collect a large piece to represent the locality. At Franklin it was a piece of orange calcite weighing ten pounds or more. It was placed in the trunk of the car next to a piece of "shot ore". All went well until we reached the Erie Railroad crossing at Upper Montclair. I took the crossing too fast, and we heard a bump in the trunk. Examination showed that the calcite had bounced squarely on to the shot ore reducing the latter to what might be called "a fine granular state".

At Portland, Conn. we found a workman sorting on one of the old Strickland dump-piles. He had just unearthed a 5″x6″ beryl crystal which father promptly bargained for. Going down Collins Hill with his beryl in one hand and a well-filled bag in the other he slipped and slid, and also let go of his crystal. When he recovered it, it was broken in



Quartz Showing Phantom
Ellenville, N. Y.
(Enlarged 4.8X)

two pieces, but repaired it is still worth exhibiting on top of a case of regular-size specimens. At Bedford, N. Y., it was a large block of rose-quartz; at Arlington, N. J., a mass of sandstone and copper ore the size of a pumpkin.

For my part I am especially satisfied with the ⅜" crystal of scapolite in matrix which I found at Franklin, my little sphene in limestone from Pine Island, sparkling datolite from West Paterson and many others of my own collecting, not to mention those I have purchased the latest being a perfect bixbyite on sand topaz from Utah the whole specimen only ¾" long by half as wide. At Amelia, Virginia, it was a monazite ¾" across studded with tantalite crystals, at Portland, Conn., three garnets in the edge of a mica and feldspar block an inch square.

My father and I have had a great deal of pleasure and recreation collecting minerals and since the days we spent in the Newark Museum have learned to appreciate all sizes of specimens. We can both thrill while looking at such a little gem as that phenacite in amazonstone from Amelia in the Museum of Natural History, New York City, and then turn to the wall cases and enthuse over massive quartz and calcite crystals. We find purple apatite from Maine and the giant topaz from Brazil in the Harvard Museum collection equally exciting. In between the extremes comes the great mass of fine specimens of the world which every collector knows and appreciates and which I cannot dwell on in a brief ramble like this.

As our own available exhibition and storage space has been shrinking it has often seemed we should perhaps cease to collect any but the smallest specimens or perhaps even shift to micromounts. Still there always seems to be space for something you really want to keep and the latest storage cabinet we have added is one to house father's surplus large specimens.

If I have given the impression that our mineral collection is dominated by extremes in size of specimens I must say a word to correct the error. Cabinet size specimens predominate, but I feel that part of the joy of collecting was to gradually learn that while it is good to have museum size and quality as an ideal, a good collection can be built up on a humbler scale. So father and I get along perfectly in the field, meeting often on the middle ground between gram and kilogram (or several kilograms) weight specimens, but still not getting away completely from the influence of the old Newark Science Museum.

AN INTERESTING CAVE IN BORNEO

Sarawak is an independent state or province (under the protection of Great Britain) which comprises the northwestern part of the large island of Borneo in the Dutch East Indies. Its area is about 50,000 sq. miles and population a little over 500,000. The capital is Kuching (Sarawak) in the southwestern part of the country; its population is about 25,000.

Paku is a village in Sarawak about 30 miles southeast of Kuching and situated in an area of Jurassic limestone. About ½ mile east of Paku is a rocky gorge between two hills in one of which is an interesting cave known as the Ensunah Cave. It is about 500 feet long but very irregular in width and height; in some parts it is only a foot or so in width, in others 50 feet or more. The roof of the cave is so full of cracks and crevices that tree roots, long and slender, have penetrated the interior and entwined themselves in a most remarkable manner around the crevices. The cave is very wet; water drips down constantly in some parts and the soft floor below is perforated with small round holes which the falling drops of water had drilled.

The floor of the cave contains traces of gold and it has been much dug up in the search for the precious metal. This digging was done many years ago by Chinese miners who were operating gold mines in the vicinity. It was due to this digging that the limestone floor of the Ensunah Cave is so soft that drops of falling water can perforate it.

TIBET NOTED FOR BORAX

A country about which we hear very little and especially from a mineralogical standpoint is Tibet. This may be due to the fact that for ages the country was a forbidden land to strangers and especially those of the white race. That minerals must occur and in huge amounts is only too evident for Tibet is an extremely mountainous country.

Tibet (or Thibet) lies in south central Asia sandwiched between two lofty mountain ranges—the Kuen Lun on the north and the Himalaya on the south. Not only is it surrounded on all sides by mountains but Tibet is the highest country in the world, averaging 16,000 feet above sea-level.

Tibet is about 463,000 sq. miles in area, has a population of about 2,000,000, and is, apparently, a province or territory of China—it occupies the extreme southwestern part of China. The capital of Tibet is Lhassa, in the southeastern part of the country.

Mineralogy

The mountains of Tibet consist chiefly of slate, granite, and limestone and in these rocks have been found gold, silver, iron, copper, coal, zinc, mercury, cobalt, and sulphur. Gold is widely distributed, every stream carries the precious metal in its sands and gravels—indeed gold has been worked from ancient times in all parts of the country. In western Tibet the gold mines of Thok Jalung, the most extensive in the country, are worked six months of the year. The Kuen-Lun Mountains of northern Tibet have for centuries been the chief source of jade for China. Turquoise and lapis lazuli are also known to occur. Large irregular crystals of corundum of a brown color and bronzy luster have been found.

The only mineral known to the average collector as coming from Tibet is borax which is very common and often found in excellent white crystals. For centuries Tibet was the main source of borax which was brought to Europe in a crude state, called tincal, and there purified. When borax was found in enormous quantities in California, the output from Tibet received a death blow.

Borax Occurrences

Borax occurs in loose white crystals, crystalline grains, or encrustations, associated with halite (rock salt), on the shores of several lakes in Tibet. According to Dana[1]: "The lakes furnishing the borax or tincal are in Ladak and Great Tibet. The most westerly deposits are in the lake-plain of Pugha on the Rulangchu (a branch of the Indus River) at an elevation of 15,000 feet. The deposits of impure borax (sohaga) here occur over an area 2 miles long by ¾ mile broad, covered by a saline efflorescence; successive crops are obtained by the action of moisture (rain or snow) and subsequent evaporation. Deposits also occur to the east of the Pugha district at the lakes of Rudokh where a purer material (chu tsale) or water borax is obtained; also farther east at the large lakes of Tengri-Nur, 100 miles north of Lhasa, and further at the lake Buh Cho to the north and Yamdok Cho or Patte to the south."

Salt (halite), soda, and potash also occur in abundance in the western lake regions.

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1 Dana, E. S. *System of Mineralogy*, John Wiley & Sons, New York, 6th Ed., p. 887.

SOUTHERN CALIFORNIA LOCALITIES

By JACK SCHWARTZ

656 South Hendricks Ave., Los Angeles, Calif.

8. Pala

The beginning of Pala (in a mineralogical sense) was in 1892 when Mr. C. R. Orcutt discovered rubellite tourmaline there. Ten years later, Mr. F. M. Sickler discovered a variety of spodumene, namely kunzite. With these discoveries came other gems, and new minerals to science.

Pala is the site of an early California mission. It is in San Diego County, about 25 miles from Oceanside. A few miles northwest of Pala is the famous Palomar Observatory.

The hills surrounding Pala are dotted with numerous mines and diggings, mute evidence to the great activity once upon a time. It still is one of the "must" places in Southern California, and collectors, armed with shovels and screens, still work the old dumps, until a good specimen found here is really a rarity.

Perhaps the two most outstanding mines to produce gems were the Pala Chief and the Stewart Lithia Mines. All in all, Pala produced pink and green tourmalines, beryl, garnet, rose quartz, rock crystal, topaz, spodumene and its varieties, kunzite and hiddenite.

Many of the minerals taken at Pala are rare, some of them a one-locality mineral. Bismuth, a native element is recorded from Pala. In the oxides, bismite and psilomelane are known to occur. Bismutospharite, a carbonate; columbite, a tantalate; and pucherite, a vanadate, are also recorded.

The following phosphates are known to be found at Pala: Triphylite, lithiophilite, triplite, amblygonite, palaite, stewartite, salmonsite, strengite, purpurite, sicklerite and hureaulite.

Albite, anorthite, pollucite, stilbite, halloysite, muscovite, biotite, lepidolite, cookeite, allanite, and andalusite are the silicates reported from Pala.

Near the mission in Pala, the collector can view a local collection in the store. Here, also, the collector may receive information as to which mine is open to amateurs.

Literature.

Kunz, G. F.
1893. *Mineral resources of the U. S.* Rept. U. S. Geol. Surv. 1893.

Pabst, A.
1938. *Minerals of California.* Calif. Div. Mines Bul. 113.

Sperisen, F. J.
1938. *Gem Minerals of California.* Calif. Jour. Mines & Geol. 34 (1): 34-74.

COLLECTORS' KINKS

A Display Kink

Some crystal groups of minerals are arranged so that all the crystals are not visible on display. I usually mount these specimens in an ordinary glass caster (used under tables and other wooden furniture to keep the floor unmarred), and either Plaster Wood or Plaster of Paris is used to set the specimen into the caster. A neat label is glued onto the caster. Specimens which have crystals on both sides of the matrix are unusually attractive set up in this manner.

Jack Schwartz.

ANOTHER LETTER FROM ALBANESE

Editor R & M:

Received your letter of March 3rd, also the March issue of ROCKS AND MINERALS. Thanks a million for both. I had no mineralogical literature of any kind to read as I did not bring anything with me, as we were told at the recruiting office not to bring books, tools, cameras, etc. Have read the March issue 3 times already. Might read it 40 times more before I get off this island.

My mineral collecting has been a flop, so far. Simply because I cannot roam around. We are all assigned to a certain area and not allowed to go out of the area.

On Island (X), from which place I sent you a card, there were several mining localities but I could not visit them. One famous deposit was but a stone's throw, and I could not go near it. However I picked up a piece of slag near the dump and it has beautiful microscopic crystals in the cavities. I shall examine the crystals when I get home.

On another island which had huge mountains and mineral deposits, I was confined to the beach area so could not go up to the mountains. However I picked up several pebbles on the beach which appear to be granite. This island had a gold mine worked by natives but owned by a British syndicate—but I could not visit it as it was beyond my area.

Glad to know the specimens we picked up at Edison, N. J., have been identified. I took a few pieces home after that trip to await identification. You saved me the bother. Thanks.

Glad to hear Schortmann's Exhibit was a success. Hope to be able to attend it this year.

Will give you a more detailed account of my geological observations when I get back to the states. Cannot do it now as the Censors would not pass it. However, I am on an island which is of recent geological date. It is still rising from the sea as outcrops of massive coral are evident all over the island. I have found no minerals on this island; the upper strata are massive coral. Found what appears to be a meteorite. Best wishes to you and to all members of the Rocks and Minerals Association.

John S. Albanese, U. S. Navy
Somewhere in the S. W. Pacific.
April 28, 1943.

Editor's Note: A previous letter from Mr. Albanese appeared on page 112 of the April, 1943, issue of ROCKS AND MINERALS. He is a well-known mineral collector and dealer from Newark, N. J.

A FOSSIL OCCURRENCE IN ARABIA

Halfway down the Red Sea, on the west coast of Arabia, lies Jiddah (Jeddah), a city of 30,000 population. It is the chief sea port of Hijaz (Hejaz) Province, and the landing place for throngs of Mohammedan pilgrims to the holy city of Mecca—about 46 miles to the southeast. . The geographical location of Jiddah is 21°28′ N. Lat. and 39°10′ E. Long.

A good part of the western portion of Jiddah has been built on land reclaimed from the sea. The raised beaches bordering the city consist of white coral limestone which has been quarried for the construction of houses and buildings. In the quarries and in the walls of many buildings, very fine specimens of fossil coral are to be seen. Great masses of brain coral, *Meandrinae* and *Astreoporae* are present. Blocks of limestone full of very perfect *Madreporae* (a coral branching like a small tree) are also common.

Due to the crystalline nature of limestone, the buildings of the city are of dazzling whiteness when viewed in bright sunlight.

PATERSON MUSEUM

Paterson Museum, of Paterson, N. J., has begun the issuance of a small leaflet (Science Monthly) which is to be distributed among its large host of friends and among the schools of its vicinity. The first issue (Vol. 1, No. 1—May, 1943) contains four pages. Its contents are: Holland Submarine helps sell war bonds; Minerals that perform; Museum Notes; Introduction (editorial); Departments; and Iron.

Although minerals form the largest number of items on display in this famous museum, other subjects are also well exhibited. The following are the principal fields of science represented in the Museum: Natural History (birds, reptiles, insects); Ethnology (Cultures of some of the countries); Archaeology (Implements of North American Indians); Palaeontology; Geology; Mineralogy; and Industry.

Wm. C. Casperson, the well-known mineralogist of Paterson, is the Curator.

The Museum is open daily from 1 to 5 p.m., Saturdays, 10 to 12. Closed on Sundays and holidays. Its location is 268 Summer St. near the Public Library on Broadway.

"You will always find a hearty welcome at the Museum."

Rocks and Minerals Free Samples Fund

Founded to cover cost of free copies of the magazine to be distributed during the New Jersey Mineral Show to be held later in the year.

Contributions Received From

Rocks and Minerals	$10
John Albanese, Newark, N. J.	$10
Miss Violet Miller, Brooklyn, N. Y.	$ 2
Miss Evelyn Waite, Crestwood, N. Y.	$ 1
Mark M. Foster, Denio, Ore.	$ 2
Anonymous, Hartford, Conn.	$ 2
Anonymous, Hackettstown, N. J.	$ 1
Arthur Straley, U. S. Navy	$ 1
David M. Seaman, Pittsburgh, Pa.	$ 2
Joseph A. Kuhn, Buffalo, N. Y.	$ 1
Mrs. R. M. Gunnison, Pawling, N. Y.	$ 1
Sourdough, Alaska	$ 2
Total	$35

The New Jersey Mineral Show that was scheduled to be held during the fall of 1942 was postponed to 1943 (due to war). The Rocks and Minerals Free Samples Fund (founded to cover cost of free copies of the magazine which are to be given away at the Show) is being carried over.

TO A ROCKHOUND

In his home at Mountain View
Vic has rocks of every hue,
Brown and black, red, white and blue,
Orange, green, and yellow too

Round rocks, flat rocks, fat and lean,
The likes of which we'd never seen.
Polished rocks of lustrous sheen,
They are Vic's pride and joy I ween.

Rocks in frames upon the wall,
Rocks in boxes large and small,
Rocks in cases short and tall,
By name each rock Vic can call.

From mountain tops, from valley floor,
From mines, deep down from rocky shore,
From friends, collectors, by the score,
Vic gathers up his precious store.

Large mounds in the yard with rocks galore,
Polished rocks for knobs on his front door.
Paper weights, bookends, doorstops on floor,
Fluorescent stones, gems, and many more.

Inez Pettit.

A tribute to the fine mineral collection of Mr. Victor H. Larson, of Petaluma, Calif., by a member of a women's club recently entertained at his home. Mr. Larson is a member of the R. & M. A.

MARK FOSTER STAKES OUT SCHEELITE CLAIMS

Mark M. Foster, the "Opal King" of Virgin Valley, Nev., has suspended opal mining indefinitely in order to develop four scheelite claims which he has staked out. These claims are in the Pine Forest Mountains of northern Humboldt County, Nevada, (about 10 miles from Denio, Ore.). There were skeletons of two dead horses on the property, so Mr. Foster fastened a skull to each of his two claims and named them "Man O War Claims".

The scheelite is in quartz associated with epidote and garnet.

The area in which the Man O War claims are located contain huge deposits of scheelite—may be one of the richest tungsten areas in the country, if not in the world—and many claims have been staked out. The Man O War claims may turn out to be the best in the area.

Collectors' Tales

A "HUMAN" INGREDIENT IN BELL CASTING!

This story is not actually connected with minerals but as it deals with a metal and was told us by a collector, we thought it would be permissible for appearance in ROCKS AND MINERALS.

For centuries, bells cast in China had the reputation of giving a richer, clearer and more musical tone than those cast in other countries. For years American bell manufacturers had been exceedingly puzzled why bells cast by the Chinese were so vastly superior to those of other makes. They knew it must be some ingredient added to the metal but what was it? Finally they decided to send a representative to China to learn the secret of the Celestial bell casters. He went and he learned!

During the casting of a bell, a live Chinaman (a condemned criminal) would be thrown into the molten metal to be consumed. This was the ingredient that enriched the quality of the metal!

Many years ago Chinese bells were ordinary ones, too, but one day, when a large one was being cast, a workman lost his balance and fell into a pot of molten metal to be instantly consumed. The thrifty Chinese did not throw away that pot of metal but used it—assuming that the presence of a human being in the metal would not detract too much from its quality. To their amazement, however, they discovered that the bell, when cast, gave a richer, clearer, and more sweeter tone than that of any cast before. They knew that it was the presence of the human being that made this possible and from that time on a human being (always a condemned prisoner) had to be sacrificed in the casting of a bell.

When the American bell manufacturers heard of the "ingredient" used by the Chinese they surmised, of course, that it was some element or chemical in the human body. Investigation proved that it was the phosphorus in the bones. Now the American bell casters add phosporus to their metal to give their bells the same rich quality of tone as those made by the Chinese.

Clubs Affiliated With the Rocks and Minerals Association

ARIZONA

Mineralogical Society of Arizona
Geo. G. McKhann, Sec.. 909 E. Willetta Street, Phoenix.
Meets at the Arizona Museum in Phoenix on the 1st and 3rd Thursday of each month.

CALIFORNIA

East Bay Mineral Society
Miss Nathalie Forsythe, Sec., 1719 Allston Way, Berkeley.
Meets on the 1st and 3rd Thursdays of each month (except July and August), at 8:00 p.m., in the Lincoln School Auditorium, 11th and Jackson Sts., Oakland.

Northern California Mineral Society, Inc.
Mrs. Bernice V. Smith, Sec., 1091 Bush St., San Francisco.
Meets on the 3rd Wednesday of the month at the Public Library, San Francisco, at 8:00 p.m.

Pacific Mineral Society
Margaret Cotton, Sec., 2129—9th Ave., Los Angeles.
Meets on the 2nd Friday of each month at 6:30 p.m., at the Hershey Arms Hotel, 2600 Wilshire Blvd., Los Angeles.

Southwest Mineralogists
Dorothy C. Craig, Corres. Sec., 4139 S. Van Ness Ave., Los Angeles.
Meets every Friday at 8:00 p.m., Harvard Playground, 6120 Denker Ave., Los Angeles.

COLORADO

Canon City Geology Club
F. C. Kessler, Sec., 1020 Macon Ave., Canon City.
Meets on the 1st and 2nd Saturdays of each month at 9:00 a.m. in the High School Building, Canon City.

CONNECTICUT

Bridgeport Mineral Club
Miss Georgianna Seward, Sec., 2859 Main St., Bridgeport.
Meets in the Bridgeport Public Library on the 3rd Monday of the month.

Mineralogical Club of Hartford
Miss Gladys L. Gage, Secretary, 239 Newbury St., Hartford.
Meets the 2nd Wednesday of each month, at 8:00 p.m., at 249 High St., Hartford.

New Haven Mineral Club
Mrs. Lillian M. Otersen, Sec., 16 Grove Place, West Haven.
Meets on the 2nd Monday of the month at the Y. W. C. A. on Howe St., New Haven.

IDAHO—OREGON

Snake River Gem Club
Frank S. Zimmerman, Sec., Payette, Idaho.
Meets alternately in Payette, Idaho, and Ontario, Oregon, (two small cities on the Snake River) on the 3rd Tuesday of every month.

ILLINOIS

Junior Mineral League
William Dacus, Sec., Morgan Park Junior College, 2153 W. 111th St., Chicago.

MAINE

Maine Mineralogical and Geological Society
Miss Jessie L. Beach, Sec., 6 Allen Avenue, Portland.
Meets last Friday of the month at 8 p.m., at the Northeastern Business College, 97 Danforth Street, Portland.

MASSACHUSETTS

Boston Mineral Club
Miss M. Gertrude Peet, Sec., 8 Willard St., Cambridge.
Meets on the 1st Tuesday of the month at 8:00 p.m., at the New England Museum of Natural History, 234 Berkeley St., Boston.

Connecticut Valley Mineral Club
Mary E. Flahive, Secretary, 96 South St., Florence
Meets on the 1st Tuesday of each month at 8 p. m. at various institutions in the Connecticut Valley.

MISSOURI

National Geologist Club
Mrs. D. P. Stockwell, Pres., Mt. Olympus, Kimmswick.

NEVADA

Reno Rocks and Minerals Study Club
Mrs. Rader L. Thompson, Sec., Box 349, R2, Reno.
Meets on the 1st Wednesday of each month, at 7:30 p.m., at the Mackay School of Mines, Reno.

NEW JERSEY

Newark Mineralogical Society
Louis Reamer, Secretary, 336 Elizabeth St., Orange.
Meets on the 1st Sunday of the month at 3 p.m. at Junior Hall, corner Orange and North 6th Streets. Newark.

New Jersey Mineralogical Society
G. R. Stilwell, Sec., 1023 W. 5th St., Plainfield.
Meets on the 1st Tuesday of the month at 8 p.m. at the Plainfield Public Library.

NEW MEXICO

New Mexico Mineral Society
R. M. Burnet, Sec.-Treas., Carlsbad.

Society of Archaeology, History and Art
Carlsbad.

NEW YORK

Chislers, The
Miss Evelyn Waite, Sponsor, 242 Scarsdale Road, Crestwood, Tuckahoe.

Queens Mineral Society
Mrs. Edward J. Marcin, Sec., 46-30—190th Street, Flushing.
Meets on the 1st Thursday of the month at 8 p.m. at 8501 - 118th St., Richmond Hill.

PENNSYLVANIA

Thomas Rock and Mineral Club
Mrs. W. Hersey Thomas, Pres., 145 East Gorgas Lane, Mt. Airy, Philadelphia.
Meets on the 3rd Friday of each month, at 8:00 p.m., at the home of its president, Mrs. Thomas.

VERMONT

Mineralogical Society of Springfield
Victor T. Johnson, Sec., 11 Elm Terrace, Springfield.
Meets on the 3rd Wednesday of each month at 8:00 p.m. at the homes of members.

WISCONSIN

Wisconsin Geological Society
Milwaukee Public Museum, Milwaukee, Wisc.
Meets on the 1st Monday of each month at 8:00 p.m., at the Public Museum in Milwaukee.

With Our Dealers

Many collectors have inquired where to purchase mineral cabinets. In this issue John A. Grenzig, of Brooklyn, N. Y., is offering a very good one that was specially built for his private collection. Incidently Mr. Grenzig informs us that no more Estwing pick hammers are to be had.

A new dealer appears in this issue who is well-known to many collectors. He is E. Mitchell Gunnell, of Denver, Colo., who is offering a choice selection of Colorado golds and silvers.

Mrs. Janet M. Hoadley, of West Townshend, Vt., is offering for sale her late husband's very fine crystal collection and mineralogical library. Mr. Hoadley was widely known—not only as a member of many mineral clubs but also as a collector of choice mineral specimens. In later years he specialized in crystals.

Ward's Natural Science Est., Inc., of Rochester, N. Y., are featuring some recent additions to their huge stock. Despite the war they are still supplying the mineral collector with best available specimens at lowest possible prices.

Frank H. Waskey, of Aleknagik, Alaska, is offering in this issue some attractive masses of metacinnabarite. In ordering specimens of this unusual mineral, make all money orders payable at Dillingham, Alaska, and not Aleknagik.

In the March issue an error occurred in his advertisement. Placer cinnabar nuggets were offered up to 125 lbs. in weight—the weight should have been 1 lb. only.

Warner & Grieger, of Pasadena, Calif., are offering this month a large variety of choice gem-quality minerals from all over the world. It takes two full pages to list their offerings —read them both carefully so that you will not miss even one item. Better be sure than be sorry.

Mineral Supply House, Spokane, Wash., have just released Price-list #65. It is a 28 page catalog, alphabetically listing a large number of choice minerals. An attractive feature of the price list is that the locality of practically every mineral is also given. Some of the minerals are even offered by the pound (for class-room use). If you are not on this dealer's mailing list, look their ad up before sending for the price list—you might want to order a few specimens at the same time.

Starting on the Proper Road

(Continued from page 162)

be delighted to receive a new customer. I am also sure that the Editor would not get mad in being asked to send my compliments to the new subscriber with the first copy of ROCKS AND MINERALS sent him. I might get a nice specimen from a dealer that was different from any in my collection to compensate me for my efforts. And finally I would have the satisfaction of starting a friend or an acquaintance on the proper road to an enjoyable hobby."

CLUB AND SOCIETY NOTES

New York Mineralogical Club

American Museum of Natural History, New York, N. Y., Wednesday, April 21, 1943.

Convened: 8:07 P.M. Attendance: 53.

Mr. and Mrs. Curt G. Segeler, and Miss Evelyn Waite were elected to membership.

Mr. Trainer announced the death of Mr. John Vlismas on April 4th.

The following were voted into office for the coming year:

President: Mr. James A. Taylor
1st Vice-President: Dr. F. H. Pough
2nd Vice-President: Dr. Robert B. Sosman
Secretary: Miss Elizabeth Armstrong
Treasurer: Mr. Cecil H. Kindle
Directors: Mr. John N. Trainer, Mr. Gilman S. Stanton

Mr. Trainer then announced the speaker of the evening, Mr. Archibald N. Goddard of Detroit, Mich. After conveying greetings from the Michigan Mineral Society, The Cranbrook Institute, and Mr. Arthur Montgomery, Mr. Goddard entertained the members with many stories of his collecting experiences. Numerous specimens were exhibited including fine chlorastrolites, crystallized native silver and copper, mixed native silver and copper, copper in calcite, thomsonite, etc. from Michigan localities, and many others, outstanding among which was a splendid proustite from Chile. Mr. Goddard presented the latter to the American Museum of Natural History.

The meeting was adjourned at 9:30 P.M.

M. Allen Northup, Secretary.

Southwest Mineralogists

The following officers of the Society have been elected for the year 1943-44:

Charles R. Standridge, President
Sam Boase, Vice-President
Herbert Collins, Recording Secretary
Dorothy Craig, Corresponding Secretary
Frank Stillwell, Treasurer

The Board of Directors to consist of the above named officers and E. A. Prosser, Albert Hake, and Harold Easles.

Our meetings have been well attended in spite of war work, dimouts, and gas rationing. We are planning a field trip to Coldwater Canyon, which is within the city limits of Los Angeles, on the 23rd of May.

The monthly magazines and study classes are now replacing field trips, but we are all looking forward to the time when we can get out in the open again and really go after some minerals.

The Society meets at Harvard Playground, 6120 S. enker Ave., Los Angeles, Calif.

Dorothy Craig, Corres. Sec'y.

Mineralogical Society of Arizona

The meeting held on Thurs., May 6, 1943, was the last of the semi-monthly meetings for this season. The distribution of "End-of-year Prizes" was the main feature.

During the summer a few informal meetings will be held at homes of members.

An extract from a member's letter reads:

"The latter half of our 1941-42 season was a dud. War and its many restrictions prevented our going ahead with plans for expansion. We started the 1942-43 season with little hope for anything more than holding our own, and with a small membership of 30 that wasn't much. Instead of being depressed we inaugurated some new (for us) policies. These were carried out and the results show a present membership of 65 (3 honorary members and 62 paid up to next October). We not only have plenty of reasons for being proud of this record but feel that there may be certain mineral societies around the country which have not been quite so successful. I believe some of them have actually folded up for the duration. If our experience could in any way be of some help to such societies, and they should care to know the simple details, I'll gladly see to it that the desired information is forwarded to them immediately upon receipt of their request."—H. S. Keithley, 808 W. Washington St., Phoenix, Ariz.

Mineralogical Club of Hartford

The 2nd field trip of the year will be held on Sun., June 6, 1943, to the Strickland Quarry and Schoonmaker Mine, on Collins Hill, Portland, Conn. The localities, both on Collins Hill and adjacent to each other, are noted for their pegmatite minerals.

Robert Brandenberger, 196 Otis St., Hartford, Conn., is in charge of the trip. His phone number is Hartford 5-3365.

New Jersey Mineralogical Society

A regular meeting of the Society was held on Tues., May 11, 1943, at the Plainfield Public Library, Plainfield, N. J.

The guest speaker was Mr. E. A. Maynard, of the New York Mineralogical Club, whose subject was "Rambling Through the West with Pick and Camera". This was a most interesting and instructive talk as Mr. Maynard took his audience on a trek of several thousand miles on which he stopped many times to admire and photograph botanical beauty as well as mineralogical. The talk was illustrated with many beautiful colored slides.

Northern Ohio Guild

(American Gem Society)

A regular meeting of the Guild was held on Thurs., May 6, 1943, at Western Reserve University, Cleveland, Ohio. The program consisted of a lecture on doublets and triplets by Dr. Donner of the University; a talk "Curious lore and legends of doublets and triplets" by Mrs. E. Brandau; study session for students; and the election of officers. A laboratory session in the technic of gem stone identification of doublets and triplets, conducted by Charles E. Carolyne, preceded the regular program. Mr. Charles E. Carolyne, the retiring President of the Guild, sent this message to all members:

"It has been a pleasure to have had the privilege of acting as your President during the past four years, and I am very grateful to all those who assisted in obtaining what little success has come our way. As it is my wish to not be considered for any office this year, I know that each member will do everything possible to keep the guild functioning and to give future officers the splendid co-operation which I have received.".

Bibliographical Notes

Report of the State Geologist on the Mineral Industries and Geology of Vermont, 1941-1942. By Elbridge C. Jacobs, State Geologist.

In this report Dr. Jacobs has given a full account of the rehabilitation of the Orange County copper mines, now in progress, and has presented a most interesting story of their long and famous history. The reopening of the mines, which will soon occur, will constitute Vermont's most important geological contribution to the war effort.

The text of the report is divided into two sections: Mineral Industries (Reopening of the Vermont copper mines; The established mineral industries; The quest of new sources of economic minerals) and Physiography (An abandoned stream valley in West Charleston; The great Ice Age in Vermont; Late-Glacial and Post-Glacial history of the Champlain Valley).

The report contains 83 pages and 25 illustrations and is the 23rd of this series. It is published by the Vermont Geological Survey, Burlington, Vt.

Recorded Experiments in the Production of Quartz: By Paul F. Kerr and Elizabeth Armstrong.

In this paper the authors state that in the last 100 years at least 30 investigators have recorded the production of quartz in the laboratory, that crystals so formed artificially have varied in length from a few microns to 8 millimeters. In one instance the length of natural crystals used as "seed" crystals has been increased by 14 millimeters. The duration of experiments has ranged from 3 hours to 8 years, and the temperature of formation of the quartz from room temperature to 870°C.

A number of experiments of various investigators are described in this very interesting paper. Spezia's experiments command special attention, not only because of the quality and volume of quartz produced, but also because the system involved is simple enough to admit of systematic physical-chemical investigation.

34 pp., 1 pl., 1 fig., 1 large table.

A bulletin of the Geological Society of America, 419 W. 117th St., New York, N. Y. (Vol. 54, Supp. 1, April, 1943).

Mineral Matter in Coal: By George C. Sprunk and H. J. O'Donnell.

Many minerals occur in coal among some are kaolin, pyrite, calcite, quartz, and siderite. This is a most interesting report from a mineralogical angle and its many fine photos add greatly to its value. It is a U. S. Bureau of Mines publication (Technical Paper 648), contains 67 pages and is for sale at 15c from the Superintendent of Documents, Washington, D. C.

The following reports are from the Proceedings of the U. S. National Museum, Washington, D. C.

The Late Cenozoic Vertebrate Faunas from the San Pedro Valley, Ariz.: By C. Lewis Gazin.

An interesting report on fossil vertebrate remains of the area, pp. 475-518, 3 photos, 8 figs. Pub. No. 3155.

A New Fossil Reptile from the Upper Cretaceous of Utah: By Charles W. Gilmore. Pp. 109-114, 5 figs. Pub. 3158.

Osteology of Upper Cretaceous Lizards from Utah, with a Description of a New Species: By Charles W. Gilmore. Pp. 209-214, 5 figs. Pub. No. 3163.

R. & M. A. HONOR ROLL
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The following members of the Rocks and Minerals Association are in the armed service of our country. Of the 60 members listed, one is a girl, Miss Eleanor Wales, of Auburndale, Mass. If any errors or omissions occur, please call them to our attention. We would also appreciate if members would notify us of their change in rank, etc., so that they may be properly listed.

Though some members are on foreign soil, the Association has suffered no casualties as far as is known.

Albanese, John S. (Navy), Newark, N. J.
Axtell, R. J. (Col., Army), Indianapolis, Ind.
Bagrowski, Benedict P. (Pvt., Army), Milwaukee, Wisc.
Bingham, Wm. (Capt., Army), St. Paul, Minn.
Birman, Joseph (Pvt., Army), Seekonk, Mass.
Bondley, Charles J., Jr. (Lt. Col., Army), ...?
Brixey, Austin Day, Jr. (Navy), New York, N. Y.
Brown, J. Prescott (Maj., Army), Albany, N. Y.
Campbell, Clyde (Pvt., Army), Harrison, Ohio
Cilen, Anthony (Pvt., Army), Hawthorne, N. J.
Cilen, Joseph (Pvt., Army), Hawthorne, N. J.
Connor, J. H. (Navy), Atlanta, Ga.
Crowley, Richard M. (Army), Philadelphia, Pa.
Currier, Frederick, Jr. (Pvt., Army), Meredith, N. H.
Ehrmann, M. L. (Maj., Army), New York, N. Y.
Fine, Sidney A. (Corp., Army) .....?
Gilchrest, J. R. (Lt., Navy), Nyack, N. Y.
Glasser, Frank (Sgt., Army), Gray, Idaho
Graham, D. P, Jr. (Pvt., Army), Silver Spring, Md.
Grieger, John M. (Pvt., Army), Pasadena, Calif.
Hatcher, J. S. (Brig Gen., Army), Falls Church, Va.
Irvin, A. M. (Army), Dexter, Maine
Jelinek, Joseph K. (Pvt., Army), Pasadena, Calif.
Jenni, Clarence M. (Maj, Army), Festus, Mo.
Kerridge, P. M. (Lt., Navy), Washington, D. C.
Kessler, Dr. Frank (Army), Peekskill, N. Y.
Knox, Arthur S. (Army), W. Somerville, Mass.
Knox, S. C. (Pvt., Army), Atlanta, Ga.
Kobelt, Theodore W. (Army), Wallkill, N. Y.
Komiakoff, Leo (Lt., Army), Poughkeepsie, N. Y.
Livingston, John L. (Capt., Army), Elizabethtown, Ill.
McFarling, W. L. (Pvt., Army), Lincoln, Nebr.
McKinley, Wm. C. (Army), Peoria, Ill.
Minor, W. C. (Army), Fruita, Colo.
Mixon, Carol (Pvt., Army), Lawrence, Mass.
Molnar, George (Corp., Army), Perth Amboy, N. J.
Newell, Jno. G. (Pvt., Army), Wilson, N. C.
Pancoast, Bennett S. (Pvt., Army), Woodstown, N. J.
Pearl, Richard M. (Corp., Army), Denver, Colo.
Perkins, James M. (Pvt., Army), Bridgeport, Conn.
Printz, W. Harold (Pvt., Army) Newport, Ore.
Pugsley, Ken (Pvt., Army), Pawling, N. Y.
Randolph, Jack H. (Sgt., Army), ...?
Raynolds, Dr. A. H. (Army), New York, N. Y.
Sawyer, John A. (Maj., Army), Manhattan, Kans.
Shaub, B. M. (Maj., Army), Northampton, Mass.
Shinkle, J. C. (Lt. Col., Army), Aberdeen, Md.
Smith, T. L. H. (Pvt., Army), Danbury, Conn.
Sober, Harry (Ens., Navy), Washington, D. C.
Spawn, Willman (Pvt., Army), Washington, D. C.
Stinger, Ed. (Army), ...?
Straley, Arthur (Navy), ...?
Tasman, H. G. (Navy), Nyack, N. Y.
Thompson, Norman (Corp., Army), Chico, Calif.
Wales, Miss Eleanor (Lt., WAACS), Auburndale, Mass.
Watters, Lu (Navy), San Francisco, Calif.
Weight, Harold O. (Sgt., Army), ...?
Wildzunas, John (Corp., Army), Albany, N. Y.
Yaeckel, M. P. (Navy), Claremont, Calif.
Yedlin, Leo Neal (Army), Cedar Grove, Me.

QUESTIONS and ANSWERS

Ques. "I recently read about a pentlandite locality. This mineral does not appear in any of my books. I wonder if you can tell me what pentlandite is?" D. N. R., Torrington, Conn.

Ans. Pentlandite is a sulphide of iron and nickel. Its color is light bronze-yellow; its streak light bronze-brown. Has a metallic luster. Brittle. H 3.5-4. G 4.60. It was named after Joseph B. Pentland. Pentlandite and pyrrhotite, both massive, are commonly associated together at Worthington, Ont., Canada.

Ques. "Please advise me if Mr. Lazard Cahn, a former advertiser in *The Mineral Collector* and a business friend of my grandfather (Geo. O. Simmonds) is still alive and if so what is his address?" D. G. S., Rosebank, N. Y.

Ans. Mr. Cahn died on May 22, 1940, in Colorado Springs, Colo

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Ques. "Someday I want to visit the French Creek iron mines. I know they are in Chester County, Penn., but can you tell me how to reach them by car?" R. S., Boonton, N. J.

Ans. The mines are in the northern part of Chester County at the little settlement of St. Peters. Take route U. S. 202 out of your city and head for Norristown, Penn. About 3 miles past Norristown (on U. S. 202) turn right on Penn. 23 and head for Knauertown, about 20 miles away. In Knauertown turn right for St. Peters, about 1 mile to the north. In St. Peters you will find a railroad station bordering the left edge of the road—400 feet past the station and to the right are the dumps of the mine. About 500 feet from the edge of the dump, at right angles to the railroad, is the mine shaft (it may have been dismantled).

Just before reaching the station there is a large quarry, about 100 feet to the right of the road. This was, and perhaps still is, worked by the French Creek Granite Co., but the rock quarried is diabase. The quarry is poor for minerals. About opposite the entrance to the quarry, to the left of the road, are the falls of French Creek.